UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/752,651	12/29/2000	Robert C. Glenn	42390P9716	1502

			EXAMINER
7590	06/22/2004		LAMARRE, GUY J

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ART UNIT	PAPER NUMBER
2133	6

DATE MAILED: 06/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>08 April 2004</u> .

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1 and 3-24</u> is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1 and 3-24</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on <u>08 April 2004</u> is: a)☒ approved b)☐ disapproved by the Examiner.

     If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All b)☐ Some * c)☐ None of:

         1.☐ Certified copies of the priority documents have been received.

         2.☐ Certified copies of the priority documents have been received in Application No. _____ .

         3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

     a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .

4)☐ Interview Summary (PTO-413) Paper No(s). _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: .

FINAL OFFICE ACTION

1.   This office action is in response to Applicants' Amendment of 08 April 2004.

1.1   Claim 2 is cancelled; **Claims 1, 8 and 17** are amended. **Claims** 1 and 3-24 remain

pending.

1.2   The prior art rejections of record to **the Claims** are maintained   in response to

Applicants' **Amendment**.

1.3   The objections of record are withdrawn in response to Applicants' amendment.

Response to Arguments

2.   Applicants' arguments of 08 April 2004 have been fully considered, but they are not

persuasive.

REMARKS

3.   In response to **Claims** 1, 8 and 17, Applicants, on pages 9-11, allege that the prior art of

record does not teach "adjusting phase relationship at the transmitting end of the link."

Examiner disagrees as Applicants concede, on page 10 1st para., that **Widmer** discloses

'...reducing the low frequency content of the signal, which results in *less phase shift error...*'

Examiner notes that '*less phase shift error*' is equivalent to 'less skew.' Thus a control

means, at the transmitting end, based on frequency content of the signal, reduces skew or adjusts

phase relationship at the said transmitting end.

Therefore, the **Examiner** maintains that the prior art of record renders unpatentable

Claims 1, 8, 17 and the claims depending thereon, i.e., the prior art of record anticipates **Claims**

1 and 3-24.

Claim Rejections - 35 USC ' 102

4.1   Claims 1-24 are rejected under 35 U.S.C. 102 (e) as being anticipated by **Widmer** (US
Patent No. 6,496,540; Filed: July 22, 1998).

Widmer discloses skew adjustment algorithm in "Transformation of parallel interface

into coded format with preservation of baud-rate" wherein "the step of adjusting transmission

delay by a dynamically adjustable delay in each transmission link may be included. The step of

retiming coded data blocks on each link with a dedicated adjustable clock, and the step of

eliminating skew among the links by providing a second retiming of data transferred on the links

at a rate less than the predetermined baud rate with a clock system shared by all links may be

included. The steps of receiving transmitted coded data blocks from the transmission lines at a

receiver end is preferably included. The step of checking disparity to determine errors in the data

blocks at the receiver end may be included. The step of encoding may further include the steps of

outputting data blocks from each encoder to a disparity register and inputting disparity data from

each disparity register to the encoder associated the disparity register to create a running

disparity check of the data blocks. Further steps may include such as deserializing the serially

transmitted coded data blocks at a receiver end to provide parallel coded data blocks, decoding

the data blocks at a deserialized rate, the deserialized rate being lower than the predetermined

baud rate and multiplexing the decoded data blocks to provide parallel data blocks at the

predetermined baud rate. Each uncoded data block may include 10 bits and the predetermined

baud rate may be greater than or equal to about 2 Gbaud."

As per Claims 1-24, Widmer depicts, e.g., in Fig. 6 and related description in col. 1 line

13 et seq., the claimed method, comprising: a) measuring a skew between a data signal and a

clock signal at a receiving end of a serial link; and b) adjusting (col. 2 line 27) a phase

relationship between said data signal (col. 2 line 30) and said clock signal (col. 2 line 29) to

reduce said skew via variable delay means implementable in hardware or software, e.g., in CPU

or other digital component: Refer, e.g., to Fig. 6: block 22 and col. 2 line 23 et seq.

Widmer teaches means wherein said adjusting of said phase relationship occurs at a transmitting end of said serial link in col. 9 line 46; further comprising receiving said measured skew at a skew adjustment unit and determining said phase relationship before said adjusting a phase relationship in col. 2 line 27 and col. 10 line 23; further comprising programming said phase relationship into a semiconductor chip or IC chip in col. 9 line 27 and col. 11 line 15.
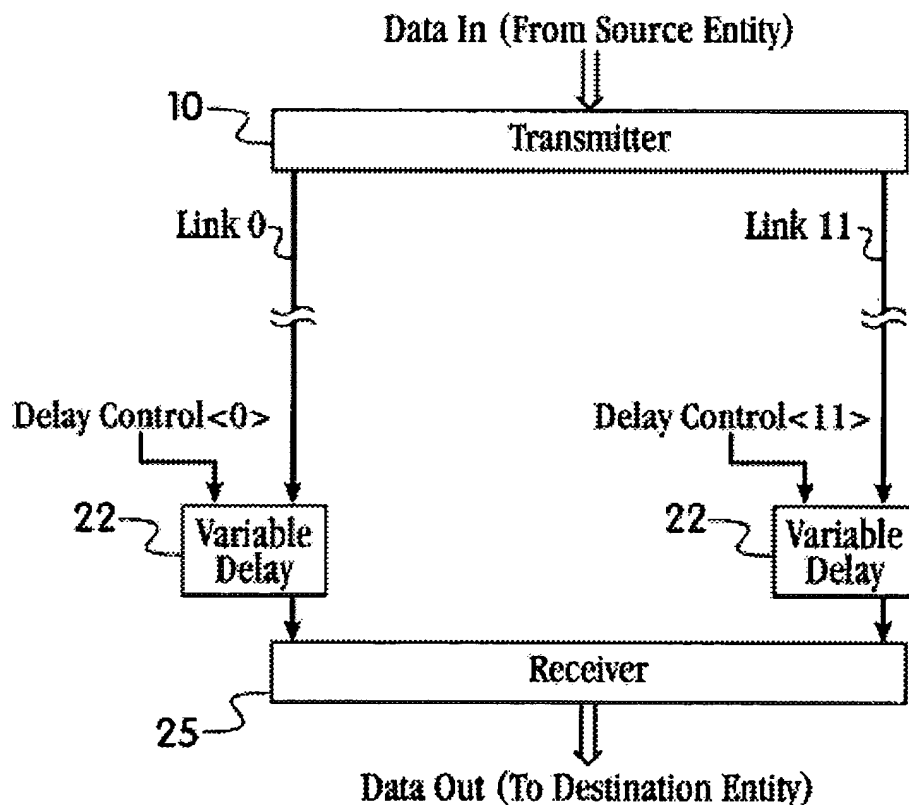

Fig. 6

Widmer further teaches means wherein said adjusting a phase relationship further comprises imposing a delay on at least one of said signals in col. 2 line 27, e.g., "*Referring to FIG. 8, each of twelve deserializers 26 is controlled by clocks (CLK<0:11>) derived from the phase* <u>*adjusted*</u>

clock 20 for that particular link. After deserialization to a six-line/link width, data remains stable for

intervals of close to 3 ns. Thus, if the skew between any two links remains well within these limits, there is

enough margin to reclock all 72 lines of the twelve links at this point with a set of clocks CLKS<0:5> to

eliminate the skew. The clocks CLKS<0:5> are 1/6th-rate clocks staggered by 0.5 ns but otherwise of

uniform phase and all originating from a shared source clock, e.g. CLKS<0> which is aligned with the

serial bit-stream of link#0. This common set of clocks controls all functions thereafter to the point where

the data is placed into a storage cell of a buffer 30 through decoders 28 and a multiplexer 29. All

functions at the output side of buffer 30 are usually controlled by a clock provided by a destination entity,

as indicated in FIG. 8. "

Widmer further teaches means to impose delay on one or both signals as seen in Fig. 6. And

wherein said adjusting a phase relationship further comprises adjusting a phase offset between a pair of

phasors associated with a pair of phase interpolators, a first of said phasors used to derive a second clock

signal that times the transmission of said data signal, a second of said phasors used to derive said clock

signal in col. 2 line 27 wherein equivalent means are provided for eliminating skews via multiple values

of a period to effectively result in phase interpolation means. Also refer to Fig. 6 wherein variable delay

blocks 22 are configured to delay signals on the links by more than 360 degrees.

Widmer further teaches that such skew adjustment approach may be used in data

communications such as network interface corresponding to a physical layer or wherein said

network interface corresponds to a media access control layer, or other transmission system

where signals may require synchronization, e.g. col. 1 line 8.

Conclusion

5.   **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of
the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from

the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing

date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH

shortened statutory period, then the shortened statutory period will expire on the date the advisory action

is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX

MONTHS from the mailing date of this final action

5.1   Any response to this action should be mailed to:

Commissioner of Patents and Trademarks, Washington, D.C. 20231

or faxed to: (703) 872-9306 for all formal communications.

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington,

VA, Fourth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should

be directed to Guy J. Lamarre, P.E., whose telephone number is (703) 305-0755. The examiner can

normally be reached on Monday to Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert

De Cady, can be reached on (703) 305-9595.

Any inquiry of a general nature or relating to the status of this application or proceeding should

be directed to the Group receptionist whose telephone number is (703) 305-3900.

Information regarding the status of an application may also be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications may be

obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is

available through Private PAIR only. For more information about the PAIR system, see

http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the

Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Guy J. Lamarre, P.E
Primary Examiner
6/17/04